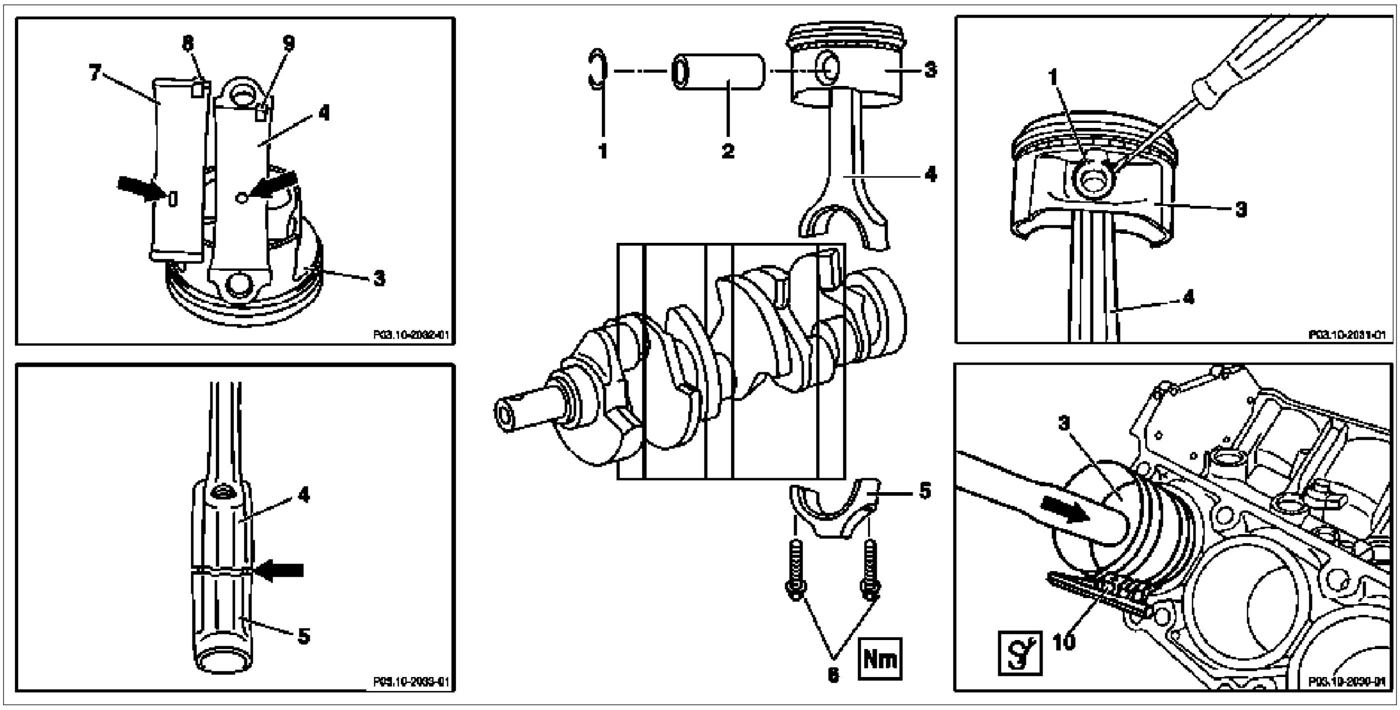
AR03.10-P-7021AV	Removing/installing pistons	2.7.97

ENGINE 112
ENGINE 112.945 in MODEL 463.209 /232 /233 /244 /245 /250
ENGINE 113.962 in MODEL 463.206 /240 /241 /247 /248 /249 /254
ENGINE 113.982 in MODEL 463.243 /246
ENGINE 113 in MODEL 129, 163, 202, 203, 208, 209, 210, 211, 215, 220, 230



P03.10-2029-09

Shown on engine 112

1 *Circlip*
2 *Piston pin*
3 *Pistons*
4 *Conrod*
5 *Conrod bearing cap*
6 *Conrod bolts*
7 *Conrod bearing shell*
8 *Anti-twist lock*
9 *Groove*
10 *Clamping strap*

	Remove		
⚠ **Danger!**	**Risk of death** caused by vehicle slipping or toppling off of the lifting platform.	Align vehicle between the columns of the lifting platform and position the four support plates at the lifting platform support points specified by the vehicle manufacturer.	AS00.00-Z-0010-01A
1	Remove engine	Models 463.206/ 209/ 232/ 233/ 240/ 241 Models 463.244/ 245/ 247/ 248/ 249/ 250/ 254 Models 463.243/ 246 Model 230.475 Model 230.474 Model 220 without 4MATIC Model 220 with 4MATIC Model 210 with 4MATIC Models 129, 202, 208, 210 without 4MATIC Model 203 without 4MATIC, 209 with Engine 112 Model 203 with 4MATIC Model 209 with Engine 113 Models 211.061/065/070 Model 170 Model 163	AR01.10-P-2400CC AR01.10-P-2401GT AR01.10-P-2401MG AR01.10-P-2400R AR01.10-P-2400RVK AR01.10-P-2400AB AR01.10-P-2400IW AR01.10-P-2400C AR01.10-P-2400CB AR01.10-P-2400PV AR01.10-P-2400PW AR01.10-P-2400Q AR01.10-P-2400TC AR01.10-P-2400SV AR01.10-P-2400CA

2.1	Detach automatic transmission from engine	Models 463.206/ 209/ 232/ 233/ 240/ 241	AR27.10-P-0500BD
		Models 463.243/ 244/ 245/ 246/ 247/ 248/ 249/ 250/ 254	AR27.10-P-0500GA
		Model 230.475	AR27.10-P-0500R
		Model 230.474	
		Model 220 without 4MATIC	AR27.10-P-0500I
		Model 220 with 4MATIC	AR27.10-P-0500IW
		Models 129, 170, 202, 208, 210	AR27.10-P-0500B
		Model 203 without 4MATIC, 209 with Engine 112,113	AR27.10-P-0500P
		Model 203 with 4MATIC	AR27.10-P-0500PW
		Model 211.061/065/070	AR27.10-P-0500T
		Model 163	AR27.10-P-0500GH
2.2	Detach manual transmission from engine	Models 129, 202, 210	AR26.10-P-0020A
		Models 203, 209 with Engine 112	AR26.10-P-0020P
		Model 211.061	AR26.10-P-0020T
		Model 208 with transmission 716.662/622	AR26.10-P-0020E
		Model 170,	AR26.10-P-0020D
		Model 208 with transmission 716.663	
3	Detach top part of oil pan	Models 463.206/ 209/ 232/ 233/ 240/ 241/ 243/ 244/ 245/ 246/ 247/ 248/ 249/ 250/ 254	AR01.45-P-7500FG
		Model 230.474/	AR01.45-P-7500R
		Model 220 without 4MATIC	AR01.45-P-7500I
		Model 220 with 4MATIC	AR01.45-P-7500IW
		Model 210 with 4MATIC	AR01.45-P-7500FA
		Model 210 without 4MATIC	AR01.45-P-7500F
		Models 202, 208	AR01.45-P-7500FC
		Model 203 without 4MATIC, 209 with Engine 112,113	AR01.45-P-7500PV
		Model 203 with 4MATIC	AR01.45-P-7500PW
		Models 211.061/065/070	AR01.45-P-7500TV
		Model 170	AR01.45-P-7500SV
		Model 163	AR01.45-P-7500FB
		Model 129	AR01.45-P-7500FD
4	Take off cylinder head	ℹ Remove intake manifold with complete wiring loom during this step.	
		Models 463.206/ 209/ 232/ 233/ 240/ 241/ 243/ 244/ 245/ 246/ 247/ 248/ 249/ 250/ 254	AR01.30-P-5800GV
		Engine 112 in model 129 and engine 113 in models 129, 202, 208, 210	AR01.30-P-5800B
		Engine 112 in models 170, 202, 208, 210, 220 and engine 113 in models 220, 230.474 /475	AR01.30-P-5800BA
		Model 163	AR01.30-P-5800MV
		Models 203, 209 with engine 112, 113	AR01.30-P-5800PV
		Models 211.061/065/070	
5	Remove oil pump	ℹ Push back chain tensioner for this step and take off chain.	
		All except models 203, 209, 211.061/065/070, 220 without 4MATIC, 230.474 /475	AR18.10-P-6020B
		Model 203 without 4MATIC, 209, 211.061/065/070	AR18.10-P-6020PV
		Model 203 with 4MATIC, model 220 with 4MATIC	AR18.10-P-6020PW
		Model 230.474/475	AR18.10-P-6020R
6	Remove conrod bearing cap (5)	ℹ For this step, mark conrod (4) and connecting rod bearing cap (5) on one side relative to each other.	
7	Remove conrod (4) together with pistons (3) by lifting up and out	ℹ If pistons have been used (3), the arrows indicating the direction of the travel and the markings on the pistons may no longer be visible due to carbon deposits. For this reason, remove the carbon deposits from the pistons. If the arrows indicating direction of travel on the pistons are no longer recognizable, these must be re-marked.	
8	Remove circlip (1) of piston pin (2)	ℹ Do not damage piston (3). Place a clean cloth underneath.	
9	Press out piston pin (2)		
	Installing		
10	Assign piston (3) to cylinder bore		AR03.10-P-7021-02BV

11	Oil piston pin (2) and conrod bush		
12	Assemble piston (3) and conrod (4)	Install piston (3) with arrow in direction of travel.	
13	Push in piston pin (2) by hand		
14	Insert circlip (1) of piston pin (2) in the groove on piston (3)	Do not damage piston (3). Place a clean cloth underneath.	
15	Oil cleaned parts (cylinder bore, conrod bearing journal, conrod bearing shells and pistons)		
16	Fit on tensioning strap (10) and tension	Piston ring gaps must be offset 120°. Tensioning strap	*000589041400
17	Install piston (3) with arrow pointing in direction of travel	Rotate crankshaft far enough so that the connecting rod when inserting piston into cylinder bore does not line up at the connecting rod journal!	
18	Inspect conrod bolts (6)	Thread and shank length	AR03.10-P-6111-01BV *BE03.10-P-1001-03A
19	Install conrod bearings and fit on conrod bearing cap (5)	The connecting rod bearing shell (7) with oil drilling (arrow) must be mounted in the connecting rod, otherwise the piston pin (2) is not lubricated. The anti-twist locks (8) of the connecting rod bearing shells (7) must be seated in the grooves (9) in the conrods (4) and connecting rod bearing caps (5). The connecting rod and connecting rod bearing cap are cracked (broken) (arrow). They must not be installed the wrong side round!	AR03.10-P-6111-06AV
20	Tighten conrod bolts (6)		AR03.10-P-6111-02BV *BA03.10-P-1001-01E
21	Rotate crankshaft	To inspect ease of operation.	
22	Install oil pump	- Ensure oil return flow check valve is correctly located. - Clean strainer of oil pump. - Fill oil pump with engine oil before installing so that it pumps oil when first started. All except models 203, 209, 211.061/065/070, 220 without 4MATIC, 230.474 /475 Model 203 without 4MATIC, 209, 211.061/065/070 Model 203 with 4MATIC, model 220 with 4MATIC Model 230.474/475	AR18.10-P-6020B AR18.10-P-6020PV AR18.10-P-6020PW AR18.10-P-6020R
23	Fit on cylinder head	Models 463.206/ 209/ 232/ 233/ 240/ 241/ 243/ 244/ 245/ 246/ 247/ 248/ 249/ 250/ 254 Engine 112 in model 129 and engine 113 in models 129, 202, 208, 210 Engine 112 in models 170, 202, 208, 210, 220 and engine 113 in models 220, 230.474 /475 Model 163 Models 203, 209 with engines 112, 113 Models 211.061/065/070	AR01.30-P-5800GV AR01.30-P-5800B AR01.30-P-5800BA AR01.30-P-5800MV AR01.30-P-5800PV
24	Fit on top part of oil pan	Model 463 Model 230.474/475 Model 220 without 4MATIC Model 220 with 4MATIC Model 210 with 4MATIC Model 210 without 4MATIC Models 202, 208 Model 203 without 4MATIC, 209 with engines 112,113 Model 203 with 4MATIC Model 211.061/065/070 Model 170 Model 163 Model 129	AR01.45-P-7500FG AR01.45-P-7500R AR01.45-P-7500I AR01.45-P-7500IW AR01.45-P-7500FA AR01.45-P-7500F AR01.45-P-7500FC AR01.45-P-7500PV AR01.45-P-7500PW AR01.45-P-7500TV AR01.45-P-7500SV AR01.45-P-7500FB AR01.45-P-7500FD

25.1	Fit on automatic transmission	Models 463.206/ 209/ 232/ 233/ 240/ 241 Models 463.243/ 244/ 245/ 246/ 247/ 248/ 249/ 250/ 254 Model 230.475 Model 230.474 Model 220 without 4MATIC Model 220 with 4MATIC Models 210, 208, 202,170. 129 Model 203 without 4MATIC, 209 with engines 112,113 Model 203 with 4MATIC Models 211.061/065/070 Model 163	AR27.10-P-0500BD AR27.10-P-0500GA AR27.10-P-0500R AR27.10-P-0500I AR27.10-P-0500IW AR27.10-P-0500B AR27.10-P-0500P AR27.10-P-0500PW AR27.10-P-0500T AR27.10-P-0500GH
25.2	Fit on manual transmission	Models 210, 202, 129 Models 203, 209 with engine 112 Model 211.061 Model 208 with transmissions 716.662/622 Model 170, Model 208 with transmission 716.663	AR26.10-P-0020A AR26.10-P-0020P AR26.10-P-0020T AR26.10-P-0020E AR26.10-P-0020D
26	Install engine	Models 463.243/ 244/ 245/ 246/ 247/ 248/ 249/ 250/ 254	AR01.10-P-2400CC
		Model 230.475 Model 230.474 Model 220 without 4MATIC Model 220 with 4MATIC Model 210 with 4MATIC Model 210 without 4MATIC, 208, 202, 129 Model 203 without 4MATIC, 209 with engine 112 Model 203 with 4MATIC Model 209 with engine 113 Models 211.061/065/070 Model 170 Model 163	AR01.10-P-2400R AR01.10-P-2400RVK AR01.10-P-2400AB AR01.10-P-2400IW AR01.10-P-2400C AR01.10-P-2400CB AR01.10-P-2400PV AR01.10-P-2400PW AR01.10-P-2400Q AR01.10-P-2400TC AR01.10-P-2400SV AR01.10-P-2400CA

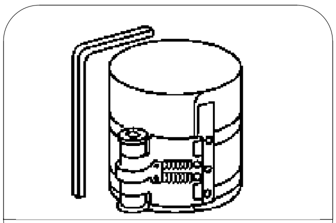
Inspection data of conrod bolts

Number	Designation				Engine 112 except 112.951, 113.94/96/980/ 981/982/984/986	Engine 113.992
BE03.10-P-1001-03A	Conrod bolts	Thread 4		M	8B 1	8B 1
		Shank length	when new	mm	47	42
			max.	mm	47.6	42.6
			Part no.		-	-

Nm Connecting rod

Number	Designation			Engines 112 except 112.951, 113.940/941/ 942/943/944/ 945/946/948/ 960/961/962/ 963/965/966/ 967/968/980/ 981/982/984/ 986/987/988/ 990/991/992/ 993
BA03.10-P-1001-01E	Connecting rod bolt	Stage 1	Nm	5
		2nd stage	Nm	25

		Stage 3	(°	90



Retaining strap

